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FIRST REPORT OF *EUONYMUS FORTUNEI* (CELASTRACEAE) NATURALIZED IN TEXAS

GUY L. NESOM
2925 Hartwood Drive
Fort Worth, TX 76109, USA
www.guynesom.com

ABSTRACT

Euonymus fortunei is documented here for the first time to occur outside of cultivation in Texas. The population, which is perhaps a large clone spread from an original planting, is in Overton Park in the central part of Fort Worth. Flowers and fruits have not been observed. Color photos are included.

KEY WORDS: *Euonymus fortunei*, Celastraceae, naturalized, Texas

Euonymus fortunei (Turcz.) Hand.-Mazz. Winter creeper, climbing euonymus

Texas. Tarrant Co.: Fort Worth, Overton Park near intersection of Owenwood Drive and Glenwood Drive, terrace bank on south side of Overton Creek, along 60 feet of embankment and covering ca. 600-800 square feet, apparently spread downslope from original plantings near a house ca. 50 feet above, in a thicket of *Prunus caroliniana*, *Photinia serratifolia*, *Ligustrum lucidum*, *Ligustrum quihoui*, *Nandina domestica*, under *Ulmus crassifolia* and young *Bumelia lanuginosa* and *Celtis laevigata*, with *Hedera helix*, the euonymus also spreading out of the thicket into adjacent mowed areas, 18 May 2009, *G.L. Nesom 2010-01* (BRIT, OKL, TEX, to be deposited).

Euonymus fortunei is an evergreen, trailing or scandent subshrub native to southeastern Asia. At the Overton Park site, it densely covers the ground, intermixed in one area with *Hedera helix*, and has grown nearly 10 feet out of the thicket into grassy areas into a constantly mowed area. Internodal adventitious roots enable the spread, and it is likely that this entire 600-800 square feet of euonymus growth is a single large clone. On the main trunk of an elm in the canopy above the thicket, the euonymus has grown upward to about 8 feet — clusters of adventitious aerial roots keep stems tightly attached to the bark. One cluster of aerial stems, presumably the potentially reproductive branches, diverges outward from the trunk and lacks aerial roots.

Winter creeper is very commonly cultivated as a ground cover in the Dallas-Fort Worth area and appears to flourish, through extreme heat and extreme cold, but it rarely has an opportunity to grow outside of manicured areas. Various sources note that it flowers only or usually when climbing and almost never when trailing along the ground. I have not seen it in flower in Texas, but photos on the Serviss (2009) web site show it in flower and heavy fruit in Arkansas and the distribution in 11 scattered counties in Tennessee (Chester et al. 2010; TEPPC 2009, listed as a "severe threat") suggests that it is successfully dispersing there beyond what could be expected simply through clonal spread. Serviss notes that "the species is "naturalized in Arkansas, seemingly more so in the northern portions of the state." Weakley (2009) notes that it is "rarely naturalized, as in bottomlands or swamps, where sometimes climbing into the canopy," and provides a key to nine species of *Euonymus*, six of which are non-native. Bottomlands and riparian habits also are characteristic of naturalized *E. fortunei* in eastern Kansas (Freeman & McGregor 1998). Spontaneous plants are noted

to climb on walls and fences, into trees, and onto utility poles in cities of eastern Nebraska (Kaul et al. 2006).

Euonymus fortunei (including *E. kiautschovicus* Loes., see synonyms below) is reported by the PLANTS Database (2009) from Ontario, Canada, 22 states in the eastern USA east of the Mississippi River, and 3 states west of the Mississippi (Arkansas, Kansas, and Missouri). The records are documented by various published and unpublished databases, checklists, floras, and personal communications. Notice by Kaul et al. (2006) of its occurrence in Nebraska apparently has not yet been picked up by national databases. It has not been recorded as naturalized in Louisiana or Oklahoma, but it seems likely that it could be found there, at least in situations similar to the one reported here for Texas.

Other commentaries and information on *Euonymus fortunei* in the USA are given in various invasive species web sites (e.g., Miller 2003; Center for Invasive Species and Ecosystem Health 2010). Detailed information on the species and a comprehensive set of references, covering the geographic extent, biology, invasiveness, and control measures, are provided by Zouhar (2009).

All USA records for *Euonymus fortunei* in the PLANTS Database except two are identified as var. *radicans* (Sieb. ex Miq.) Rehder; var. *fortunei* is reported from Illinois, based on Mohlenbrock (1986), and from Massachusetts, based on an unpublished 1992 checklist by Bruce Sorrie. In the recent overview of *Euonymus* in China, Ma et al. (2008) treated *E. fortunei* without formal infraspecific variants, noting that "Numerous taxa have been named within the *E. fortunei* complex but many of these refer to cultivated plants and are best treated as cultivars." They also observed that it is "the most common and widespread species in the genus … and is also the most complex and polymorphic." Dirr (1998) noted that it is "a variable species because it sports (mutates) so readily and the range of leaf types produced is almost endless."

Dirr (1998) provided brief characterizations of 51 cultivars of the species, including "Coloratus" (purple-leaved winter creeper), sometimes referred to as "var. *coloratus*." This name, however, apparently does not exist at varietal rank, but *Euonymus fortunei* forma *coloratus* (Rehder) Rehder is validly published (see below). The form "differs only in the leaves assuming in autumn a purple color retained during the winter, a very dark deep purple on the upper and a brighter and ligher purple on the lower surface" (Rehder 1938, p. 77).

In the Flora of Nebraska (Kaul et al. 2006), the species was identified as *Euonymus hederaceus* Champ. ex Benth. (1851), a name now considered a synonym of *E. fortunei* but published earlier than *Elaeodendron fortunei* Turcz. (1863), the basionym for *E. fortunei*. Use of *E. hederaceus* was correct in 2006, but the next year, 2007, formal conservation of the widely used *E. fortunei* was recommended by the Committee for Vascular Plants (Brummitt, Taxon 56: 1291. 2007), following a proposal for conservation by Cao and Ma (Taxon 55: 233. 2006).

Synonymy of names commonly associated with *Euonymus fortunei*, as noted by Rehder (1940), Bailey (1945), Blakelock (1951), Bean (1973), and Ma et al. (2008), is given below. Many other synonyms are not included.

Euonymus fortunei (Turcz.) Hand.-Mazz., Symb. Sin. 7(3): 660. 1933. *Elaeodendron fortunei* Turcz., Bull. Soc. Imp. Naturalistes de Moscou 26: 603. 1863. Conserved name. Type from China.

Euonymus hederaceus Champion ex Benth. in Hook., Kew J. 3: 333. 1851. Name rejected against *E. fortunei* (Turcz.) Hand.-Mazz. Type from China.

Euonymus japonicus var. *radicans* Sieb. ex Miquel, Ann. Mus. Bot. Lugduno-Batavum 2: 86. 1865. *Euonymus radicans* (Sieb. ex Miquel) Sieb. ex Hand.-Mazz., Symb. Sin. 7(3): 660. 1933 [non (Miquel) Sieb. ex Miquel, Ann. Mus. Bot. Lugduno-Batavum 3: 202. 1876, in obs.]. *Euonymus fortunei* var. *radicans* (Sieb. ex Miquel) Rehder, J. Arnold Arb. 19: 77. 1938. *Euonymus fortunei* forma *radicans* (Sieb. ex Miquel) Rehder, Man. Cult. Trees (ed. 2), 559. 1940. Type from Japan.

Euonymus carrierei Vauvel, Vulgaris Hort., No. 6. 1881 [Carrière, Rev. Hort., 373, fig. 92. 1881]. *Euonymus radicans* var. *carrierei* (Vauvel) G. Nichols., Hand-list Trees Shrubs Kew 1: 67. 1894. *Euonymus japonicus* var. *carrierei* (Vauvel) G. Nichols. & Mottet, Dict. Hort. Jard. 2: 351. 1894. *Euonymus fortunei* forma *carrierei* (Vauvel) Rehder, J. Arnold Arbor. 19: 79. 1938. Type cultivated, from China?

Euonymus kiautschovicus Loes. in Engl. Jahrb. 30: 453. 1902. Type from China.

Euonymus radicans var. *vegetus* Rehder in Sargent, Trees & Shrubs 1(3): 129, pl. 65. 1903. *Euonymus fortunei* var. *vegetus* (Rehder) Rehder, J. Arnold Arb. 19: 80. 1938. *Euonymus fortunei* forma *vegetus* (Rehder) Rehder, Man. Cult. Trees (ed. 2), 559. 1940. Type from Japan.

Euonymus patens Rehder in Sargent, Trees & Shrubs 1(3): 127, pl. 64. 1903. *Euonymus kiautschovicus* var. *patens* (Rehder) Loes., Pl. Wilson. 1(3): 486. 1913. *Euonymus fortunei* var. *patens* (Rehder) Hand.-Mazz., Symb. Sin. 7(3): 660. 1933. Type from China.

Euonymus japonicus var. *acutus* Rehder, Pl. Wilson. 1(3): 485. 1913. *Euonymus radicans* var. *acutus* Rehder, Mitt. Deutsch. Dendr. Ges. 22: 257. 1913. Type from China.

Euonymus radicans var. *kewensis* Bean, Trees Shrubs Brit. Isl. 1: 542. 1914. *Euonymus fortunei* forma *kewensis* (Bean) Rehder, J. Arnold. Arb. 28: 445. 1947. *Euonymus kewensis* (Bean) H.A. Hesse in Möller's Deutsch. Gärtn.-Zeit. 47: 217. 1932. Type from Japan.

Euonymus radicans var. *coloratus* (Rehder) Rehder, Man. Cult. Trees, 552. 1927. *Euonymus radicans* var. *acutus* forma *coloratus* Rehder, J. Arnold Arb. 7: 30. 1926. *Euonymus fortunei* forma *coloratus* (Rehder) Rehder, J. Arnold Arb. 19: 77. 1938. Type from China.

Euonymus radicans [unranked] *minimus* Simon-Louis, Cat. 1912-1913: 43. 1912. *Euonymus radicans* var. *minimus* (Simon-Louis) Rehder in Bailey, Stand. Cycl. Hort. 2: 1188. 1914. *Euonymus fortunei* forma *minimus* (Simon-Louis) Rehder, J. Arnold Arbor. 19: 79. 1938. Type from China.

Euonymus fortunei var. **villosus** (Nakai) H. Hara, Enum. Sperm. Jap. 3: 86. 1954. *Euonymus radicans* Sieb. ex Miquel var. *villosus* Nakai in J. Jap. Bot. 17: 679. 1941. Type from Japan.

Var. *villosus* is endemic to Japan (western Honshu and Kyushu) and recognized as a valid entity by Noshiro (1999) and in the Flora of Japan Database (2010). Typical *E. fortunei* also occurs in Japan.

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PHOTOS ONLINE

1. Close-up of the creeping form of the plant, arising here from numerous interlacing stems.
2. Buds 3–5 mm long from creeping stems (left); buds 10–11 mm long from aerial stems (right).
3. Aerial roots (left) and internodal adventitious roots (right) of creeping stems.
4. Aerial stems growing up trunk of an elm tree.

5 and 6. Edge of the population.

7. Locality in Overton Park, showing the extent of the whole euonymus population, which completely covers the inside of the thicket and extends out along the grassy margins.

Margination modified 2 Mar 2010; no other changes.